

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/080,449	BLAKE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Anthony Mackowey	2623	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 20 June 2005.
2. ☒ The allowed claim(s) is/are 1-38.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)           |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                   |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|   | 9. <input type="checkbox"/> Other _____   |

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Claim 14, line 5 contains a spelling error. To correct the error, replace "randomy" with --randomly--.

### ***Response to Arguments***

The amendment filed June 20, 2005 has been entered and made of record.

Applicant's arguments, see page 9, filed June 20, 2005, with respect to the objection of claim 1 have been fully considered and are persuasive. The objection of claim 1 has been withdrawn.

Applicant's arguments, see page 10, filed June 20, 2005, with respect to the objection of claim 32 have been fully considered and are persuasive. The objection of claim 32 has been withdrawn.

Applicant's arguments, see pages 13-28, filed June 20, 2005, with respect to the rejections of claims 1-38 under 35 U.S.C 103(a) have been fully considered and are persuasive. The rejections of claims 1-38 have been withdrawn.

***Allowable Subject Matter***

Claims 1-38 are allowed.

The following is an examiner's statement of reasons for allowance:

Claim 1 recites, "generating an observation likelihood function for each cluster based on a computed distance between the exemplars in each cluster."

Claim 14 recites, "estimate a dimensionality for each of the exemplar clusters based on the computed minimum distance between exemplars in each exemplar cluster; and compute an observation likelihood function for each exemplar cluster based on the dimensionality of each exemplar cluster."

Claim 23 recites, "estimate a dimensionality for each exemplar cluster; generate a likelihood function for each exemplar cluster using the estimated dimensionality."

Claim 32 recites, "for each exemplar cluster, computing a distance between a representative exemplar at a center of each cluster and each of the other exemplars in that cluster; using the computed distance to estimate an observation likelihood function for each cluster of exemplars."

The above features, as explicitly recited, and in combination with the other elements of the claims is neither disclosed nor suggested by the prior art of record.

Claims 2-13 depend from claims 1. Claims 15-22 depend from claims 14. Claims 24-31 depend from claims 23. Claims 33-38 depend from claim 32.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 5,703,960 to Soest is cited for teaching clustering involving applying multi-dimensional data values to a function previously found to sufficiently minimize distance between data points in n-dimensional space for a training set vector obtained as reference data in an invention for detecting defects in wood grain.

USPN to Moghaddam et al. is cited for teaching a likelihood function (which includes calculation of the Mahalanobis distance) that an input image is a member of a class in an invention for detecting objects or features in a scene.

"Shadow Puppetry" by Brand is cited for modeling data using a hidden Markov model with entropy minimization.

"Texture Synthesis by Non-parametric Samples" by Efros and Leung is cited for teaching texture synthesis comprising constructing an approximation to the conditional probability distribution.

"Learning to estimate scenes from images" by Freeman and Pasztor is cited for using Markov networks for scene estimation including a likelihood function measured from synthetic training data.

"Transformed Hidden Markov Models: Estimating Mixture Models of Images and Inferring Spatial Transformations in Video Sequences" by Jojic et al. is cited for teaching video summarization including a probability density of the vector of pixel values for the latent image corresponding to a cluster.

"A Bayesian theory of multi-scale cross-correlation in images" by Blake et al. is cited for teaching an observation likelihood function constructed of learned background and foreground density functions.

"Classification by Probabilistic Clustering" by Breuel is cited for teaching estimating a probability based on training examples.

"Probabilistic tracking in a metric space" by the applicants is cited for teaching the applicants' present invention, however the publication date is within 1 year of the filing date.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Mackowey whose telephone number is (571) 272-7425. The examiner can normally be reached on M-F 9:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AM  
9/30/2005

JINGGEWU  
PRIMARY EXAMINER

